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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/732,923	12/10/2003	Michael D. Edgerton	38-15(52796)C	9383
27161	7590	06/28/2005	EXAMINER	
MONSANTO COMPANY 800 N. LINDBERGH BLVD. ATTENTION: G.P. WUELLNER, IP PARALEGAL, (E2NA) ST. LOUIS, MO 63167			KOROMA, BARBA M	
			ART UNIT	PAPER NUMBER
			1638	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/732,923

Applicant(s)

EDGERTON, MICHAEL D.

Examiner

Barba M. Koroma

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 22-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: sequence data SEQ ID No. 406.

## **DETAILED ACTION**

### ***Election/Restrictions***

1.
  - I. Claims 22-27, drawn to a recombinant polynucleotide S-adenosylmethionine decarboxylase, a method of producing a plant having an enhanced phenotype, and a transgenic plant seed, classified in class 435, subclass 69.1, for example.
  - II. Claims 22-27, drawn to a recombinant polynucleotide encoding deoxyhypusine synthase, a method of producing a plant having an enhanced phenotype, and a transgenic plant seed, classified in class 435, subclass 69.1, for example.

The inventions are distinct each from the other because:

Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case, the inventions of group I and II can be used in mutually exclusive processes, involving different method steps, to make materially different end-products. In the instant case, S-adenosylmethionine decarboxylase catalyzes the formation of spermidine, whereas deoxyhypusine synthase catalyzes the formation of hypusine. Also, a search for the structure of one may not yield information on the other.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

2. During a telephone conversation with Thomas Kelley on April 22, 2005, a provisional election was made with traverse to prosecute the invention of group I, comprising the elected species of a polynucleotide encoding S-adenosylmethionine decarboxylase, of claims 22-27.

Affirmation of this election must be made by applicant in replying to this Office action.

3. Claims 22-27 have been examined in this Office action. Claims 1-21 have been cancelled.

***Claim to Priority***

4. It appears that Applicant intends to claim priority to provisional Application No. 60/449,054.

If applicant desires benefit of a previously filed application under 35 U.S.C. 119e, specific reference to the earlier filed application must be made in the instant application. For benefit claims under 35 U.S.C. 120, 121 or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications. This should appear as the first sentence(s) of the specification following the title, preferably as a separate paragraph unless it appears in an application data sheet. The status of nonprovisional parent application(s) (whether patented or abandoned) should also be included. If a parent application has become a patent, the expression "now Patent No. \_\_\_\_\_" should follow the filing date of the parent application. If a parent application has become abandoned, the expression "now abandoned" should follow the filing date of the parent application.

If the application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the

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required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

### *Claim Objections*

5. -Claim 27, line 2, is objected to for wrong spelling of the term "oprably" on line 2.
- Claim 24, line 3, is objected to for failing to recite a definite article before the phrase "encoding sequence". Correction is requested.

### Claim Rejection – 35 USC 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duvick et al (US Patent No. 6627797. Date of filing: March 16, 2001), in view of Kashiwagi et al (Accession number: S12772 – PIR database, Date – Dec 31, 1999; also published in: J. Biol Chem. 1990, Vol 265, pages 22321-22328), and Pedros et al (Planta. 1999. Vol 209, pages 153-160).

The claims are broadly drawn to a transgenic plant seed comprising a recombinant polynucleotide encoding S-adenosylmethionine decarboxylase operably linked to a promoter, and a method of producing a plant having an enhanced yield by transforming plants with said recombinant polynucleotide to produce plants with enhanced yield phenotype.

Duvick et al teach transgenic corn plants made with various maize lipoxygenase nucleic acids and their encode proteins, and methods of altering endogenous lipoxygenase expression in a transgenic maize plant using recombinant nucleic acids operably-linked to a promoter such as the PPDK promoter (column 23, lines 38-47).

Duvick et al does not teach a sequence that encodes S-adenosylmethionine decarboxylase.

Kashiwagi et al teach a sequence that encodes S-adenosylmethionine decarboxylase sequence that is 100% match to SEQ ID No. 406 (see sequence data and journal article attached).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the method of producing a corn plant with enhanced yield phenotype, as taught by Ducvick et al, and to modify that method by incorporating the DNA taught by Kashiwagi et al, given the teaching by Pedros et al, that the activity of S-adenosylmethionine decarboxylase, a key regulatory enzyme in the polyamine (spermidine and spermine) biosynthetic pathway, is generally correlated with developmental regulation growth in plants.

*Conclusion*

7. No claims are found allowable. SEQ ID Nos. 406 and 408 are taught in the prior art.

A handwritten signature in black ink, appearing to read "Amy Nelson", with a stylized, cursive script.

AMY J. NELSON, PH.D  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1600



### *Contact Information*

8. Any inquiry concerning this or earlier communications from the Examiner should be directed to Barba M. Koroma, whose telephone number is 571-272-0899. The Examiner can normally be reached from 8:00 A.M to 5:30 P.M. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amy Nelson, can be reached at 571-272-0804. The fax phone numbers for the organization where this application or proceeding is assigned are 571 273 8300. Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

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OM protein - protein search, using sw model

Run on: May 11, 2005, 22:42:53 ; Search time 21.0928 seconds  
(without alignments)  
1806.392 Million cell updates/sec

Title: US-10-732-923-406

Perfect score: 2118

Sequence: 1 MTVTIKELTNINNYIDHELSA.....KIVYDDYHLYFWKLGKKI 396

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Listing first 45 summaries

Database : PIR 79:\*

1: p1r1.\*  
2: p1r2.\*  
3: p1r3.\*  
4: p1r4.\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	2118	100.0	396	1	DCBYDM
2	479	22.6	333	1	DCRTDM
3	479	22.6	334	1	DCBYDM
4	478	22.6	334	2	AS5948
5	476	22.5	335	2	S72197
6	470	22.2	334	1	DCBYDM
7	434	20.5	368	2	T2361
8	404	19.1	362	2	T51378
9	401.5	19.0	353	2	T06515
10	398.5	18.8	357	2	S68990
11	387	18.3	369	2	T10750
12	378	17.8	393	2	S69191
13	376.5	17.8	381	2	T03947
14	372.5	17.6	400	2	T03947
15	359	16.9	361	2	T01934
16	348.5	16.5	377	2	T10708
17	343	16.2	360	2	S52662
18	341.5	16.1	361	2	T12613
19	331	15.6	363	2	S49222
20	313	14.8	398	2	T04099
21	110.5	5.2	900	2	E71623
22	108	5.1	1576	1	A23662
23	107	5.0	1034	2	G90591
24	106.5	4.9	1028	2	H71918
25	104	4.9	958	2	T44046
26	103	4.9	1126	2	S49208
27	102.5	4.8	1004	2	A71617
28	101	4.8	518	2	T22375
29	100.5	4.7	773	2	D90099

30	100	4.7	1294	2	T18473	hypothetical prote
31	99.5	4.7	810	2	B71639	vib4 protein proc
32	99.5	4.7	1204	2	T18812	hypothetical prote
33	99	4.7	498	2	G97279	protein containing
34	99	4.7	1456	2	S14005	hypothetical prote
35	98.5	4.7	1028	2	G64595	acetylflavine resist
36	98	4.6	358	1	W2ML58	E2 protein - human
37	97.5	4.6	342	1	S29133	urate oxidase (EC
38	97	4.6	317	2	A61320	ADPglyceromanno-he
39	97	4.6	580	2	T01865	hypothetical prote
40	96.5	4.6	408	2	B90517	conserved hypothet
41	96.5	4.6	1189	2	T30319	lian-Aal retrotran
42	96	4.5	628	2	S44138	polyadenylate-bind
43	96	4.5	971	2	A70179	exodeoxyribonuclea
44	95.5	4.5	502	2	B89767	hypothetical prote
45	95.5	4.5	525	2	T44074	hypothetical prote

#### ALIGNMENTS

RESULT 1  
DCBYDM  
adenosylmethionine decarboxylase (EC 4.1.1.50) precursor - Yeast (Saccharomyces cerevisiae)  
N.Alternate names: protein O1275; protein YOL052c  
C.Species: Saccharomyces cerevisiae  
C.Date: 31-Dec-1991 #sequence revision 31-Dec-1991 #text\_change 09-Jul-2004  
C.Accession: S12772; A30469; S59299; S61729; S66737; S66744  
R.Kashiyagi, K.; Taneja, S.K.; Liu, T.Y.; Taber, C.W.; Taber, H.  
J. Biol. Chem. 265, 22321-22328, 1990  
A.Title: Spermidine biosynthesis in Saccharomyces cerevisiae. Biosynthesis and process:  
A.Reference number: S12772; MUID:91093074; PMID:2266128  
A.Accession: S12772  
A.Molecule type: DNA  
A.Residues: 1-396 <KAS1>  
A.Cross-references: UNIPROT:P21182; EMBL:M38434; NID:9171054; PIDN:AAA34421.1; PID:9171  
A.Accession: A30469  
A.Molecule type: protein  
A.Residues: 2-19; A', 89-101, 'X', 103-104 <KAS2>  
R.Mannhaupt, G.; Vetter, I.; Schwarzlöse, C.; Miltzel, S.; Feldmann, H.  
submitted to the EMBL Data Library, August 1995  
A.Description: Analysis of a 26kb region on the left arm of yeast chromosome XV.  
A.Reference number: S59285  
A.Accession: S59299  
A.Molecule type: DNA  
A.Residues: 1-396 <FEL>  
A.Cross-references: EMBL:X91067; NID:9984177; PIDN:CAA62536.1; PID:9984192  
R.Mannhaupt, G.; Vetter, I.; Schwarzlöse, C.; Miltzel, S.; Feldmann, H.  
Yeast 12, 67-76, 1996  
A.Title: Analysis of a 26 kb region on the left arm of yeast chromosome XV.  
A.Reference number: S61715; MUID:96381248; PMID:8789261  
A.Accession: S61729  
A.Molecule type: DNA  
A.Statistics: nucleic acid sequence not shown; translation not shown  
A.Residues: 1-396 <MAN>  
A.Cross-references: EMBL:X91067; NID:9984177; PIDN:CAA62536.1; PID:9984192  
A.Note: the nucleotide sequence was submitted to the EMBL Data Library, August 1995  
R.Amorse, W.; Benes, V.; Rechmann, S.; Schwager, C.; Teodoru, C.; Voss, H.; Wilemann, S  
submitted to the Protein Sequence Database, July 1996  
A.Reference number: S66723  
A.Accession: S66737  
A.Molecule type: DNA  
A.Residues: 1-396 <ANS>  
A.Cross-references: EMBL:Z74794; NID:91419858; PIDN:CAA9058.1; PID:91419859; GSPDB:GNO  
A.Experimental source: strain S288C  
R.Feldmann, H.; Mannhaupt, G.; Vetter, I.  
submitted to the Protein Sequence Database, July 1996  
A.Reference number: S66743  
A.Accession: S66744  
A.Molecule type: DNA  
A.Residues: 1-396 <FEW>  
A.Cross-references: EMBL:Z74794; NID:91419858; PIDN:CAA9058.1; PID:91419859; GSPDB:GNO  
A.Experimental source: strain S288C

C/Comment: The pyruvyl group derived from 88-Ser is required for catalytic activity and C/Genetics:

A/Gene: SGD:SPB2; MIPS:YOL052C  
 A/Cross-references: SGD:S0005412; MIPS:YOL052C  
 A/Map position: 15L  
 C/Superfamily: S-adenosylmethionine decarboxylase, eukaryotic type  
 C/Keywords: blocked amino end; carbon-carbon lyase; carboxy-lyase; polyamine biosynthesis  
 F/2-87/Domain: beta chain #status experimental <CHB>  
 F/2-87/88-396/Product: adenosylmethionine decarboxylase #status experimental <MAT>  
 F/88-396/Domain: alpha chain #status experimental <CHB>  
 F/88/Modified site: pyruvic acid (Ser) (in mature form) #status experimental

Query Match 100.0%; Score 2118; DB 1; Length 396;  
 Best Local Similarity 100.0%; Pred. No. 7e-154;  
 Matches 396; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

QY 1 MTATIKELTNVYIDHLSATLSTDAFEGPEKLETFPPHKSIITTEKLNIGMDRW 60
DB 1 MTATIKELTNVYIDHLSATLSTDAFEGPEKLETFPPHKSIITTEKLNIGMDRW 60
QY 61 IETIKLVKCEVLSMKKTKREDAFLSSSLFVDPDKLMTKCGTTTLFCLKELFOIVEQ 120
DB 61 IETIKLVKCEVLSMKKTKREDAFLSSSLFVDPDKLMTKCGTTTLFCLKELFOIVEQ 120
QY 121 ELSSAFRTTGGKXKPKVFRRCPLFPCKQAIIHQMADVDYLNKFPDNGKSYGVR 180
DB 121 ELSSAFRTTGGKXKPKVFRRCPLFPCKQAIIHQMADVDYLNKFPDNGKSYGVR 180
QY 181 NDKSNHNLVYETEDRSTPGKKEYIEDDETFEVLMTLDEPCASKFCGEASTALVE 240
DB 181 NDKSNHNLVYETEDRSTPGKKEYIEDDETFEVLMTLDEPCASKFCGEASTALVE 240
QY 241 PNEKGHNLGYOMTKNRLDEIYVNSAODSDLSFHHAPAFATPCGYSNNMLAKYYTL 300
DB 241 PNEKGHNLGYOMTKNRLDEIYVNSAODSDLSFHHAPAFATPCGYSNNMLAKYYTL 300
QY 301 HTPEKMSYASPESNIPVDISOGKODNLDVLIHLNVQPREFSMTPTKYNQNSFO 360
DB 301 HTPEKMSYASPESNIPVDISOGKODNLDVLIHLNVQPREFSMTPTKYNQNSFO 360
QY 361 KLSINESLPDYIKLKIYVDLDDYHLFMYKLQKKI 396
DB 361 KLSINESLPDYIKLKIYVDLDDYHLFMYKLQKKI 396

```

RESULT 2

DCRTDM

adenosylmethionine decarboxylase (EC 4.1.1.50) precursor - rat

C/Species: Rattus norvegicus (Norway rat)

C/Date: 30-Sep-1992 #sequence revision 30-Sep-1992 #text\_change 09-Jul-2004

C/Accession: J00439; B31786; S18487; A47002

R/Pulkka, A.; Keranen, M.R.; Salmela, A.; Salmikangas, P.; Ihalaenen, R.; Pajunen, A.  
 Gene 86, 193-199, 1990

A/Title: Nucleotide sequence of rat S-adenosylmethionine decarboxylase cDNA: comparison  
 A/Reference number: J00439; MUID:90215298; PMID:23233572

A/Accession: J00439

A/Molecule type: mRNA

A/Residues: 1-333 <PUL>

A/Cross-references: UNIPROT:P17708; GB:M34464; NID:G202754; PIDN:AAA0683.1; PID:G202755

R/Pajunen, A.; Crozat, A.; Jaenne, O.A.; Ihalaenen, R.; Laitinen, P.H.; Stanley, B.; Mad  
 J. Biol. Chem. 263, 17040-17049, 1988

A/Title: Structure and regulation of mammalian S-adenosylmethionine decarboxylase.  
 A/Reference number: A92685; MUID:89034205; PMID:2460457

A/Accession: B31786

A/Molecule type: mRNA

A/Residues: 1-4, 'P', '6-145, 'A', '147-333 <PAU>

A/Cross-references: GB:M34464

R/Pulkka, A.; Ihalaenen, R.; Aatsinki, J.; Pajunen, A.  
 FEBS Lett. 291, 289-295, 1991

A/Title: Structure and organization of the gene encoding rat S-adenosylmethionine decarboxylase  
 A/Reference number: S18487; MUID:92038054; PMID:1936275

A/Accession: S18487

A/Status: translation not shown

A/Molecule type: DNA

A/Residues: 1-145, 'A', '147-333 <PU>

A/Cross-references: GB:M64274; NID:G206843; PIDN:AAA42105.1; PID:G206844

R/Pulkka, A.; Ihalaenen, R.; Suorsa, A.; Riviere, M.; Szpiller, J.; Pajunen, A.  
 Genomics 16, 342-349, 1993

A/Title: Structures and chromosomal localizations of two rat genes encoding S-adenosylmethionine decarboxylase  
 A/Reference number: A47002; MUID:93300506; PMID:8314573

A/Accession: A47002

A/Status: preliminary; translated from GB/EMBL/DBJ

A/Molecule type: DNA

A/Residues: 1-145, 'A', '147-333 <RES>

A/Cross-references: EMBL:Z15109; NID:955705; PIDN:CAA7894.1; PID:G818018

C/Comment: The proenzyme is cleaved after translation into an alpha chain and a beta chain required for enzyme activity. The active enzyme catalyzes the decarboxylation of S-adenosylmethionine to form S-adenosylhomocysteine and pyruvate.

C/Genetics:

A/Gene: AMD1B

A/Introns: 37/2; 66/2; 108/3; 143/1; 157/2; 236/3; 288/3

C/Superfamily: S-adenosylmethionine decarboxylase, eukaryotic type  
 C/Keywords: blocked amino end; carbon-carbon lyase; carboxy-lyase; polyamine biosynthesis  
 F/1-67/Domain: alpha chain #status predicted <CHB>  
 F/1-67/68-333/Product: adenosylmethionine decarboxylase #status predicted <MAT>  
 F/68-333/Domain: beta chain #status predicted <CHB>  
 F/68/Modified site: pyruvic acid (Ser) (in mature form) #status predicted

Query Match 22.6%; Score 479; DB 1; Length 333;  
 Best Local Similarity 30.9%; Pred. No. 5e-29;  
 Matches 117; Conservative 68; Mismatches 138; Indels 56; Gaps 10;

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QY 22 LDSTDAFEGPEKLETFPPHKSIITTEKLNIGMDRWIETIKLVKCEVLSMKKTKEL 80
DB 1 MEAHFPEGTEKLETFPPHKSIITTEKLNIGMDRWIETIKLVKCEVLSMKKTKEL 80
QY 81 DAFLLSSSLFVDPDKLMTKCGTTTLFCLKELFOIVEGELSWAFRTTGGKXKPK 137
DB 81 DAFLLSSSLFVDPDKLMTKCGTTTLFCLKELFOIVEGELSWAFRTTGGKXKPK 137
QY 138 -KTVSRRCPLFPCKQAIIHQMADVDYLNKFPDNGKSYGVRANDSNHNLVYETDR 196
DB 138 -KTVSRRCPLFPCKQAIIHQMADVDYLNKFPDNGKSYGVRANDSNHNLVYETDR 196
QY 196 OSFFYSRKNEMKRSKGYPRNFOESIEPLNALFPNGAGCWMGRM-SDCWYLYTTLDP 166
DB 196 OSFFYSRKNEMKRSKGYPRNFOESIEPLNALFPNGAGCWMGRM-SDCWYLYTTLDP 166
QY 166 STPGKKEYIEDDETFEVLMTLDEPCASKFCGEASTALVEPNEKGHNLGYOMTKN 256
DB 166 STPGKKEYIEDDETFEVLMTLDEPCASKFCGEASTALVEPNEKGHNLGYOMTKN 256
QY 256 S-----RVINQPTQTEILMSHLDPAVMQFTN-----KQGVAKVYTR 206
DB 256 S-----RVINQPTQTEILMSHLDPAVMQFTN-----KQGVAKVYTR 206
QY 207 TRLDIYVNSAODSDLSFHHAPAFATPCGYSNNMLAKYYTLHTPEKMSYASPESN 316
DB 207 TRLDIYVNSAODSDLSFHHAPAFATPCGYSNNMLAKYYTLHTPEKMSYASPESN 316
QY 316 SCGRDLIPGSVIDATL-----FNP CGSNMGKMSDGYWTIHITPEPEFSVSPETN 258
DB 316 SCGRDLIPGSVIDATL-----FNP CGSNMGKMSDGYWTIHITPEPEFSVSPETN 258
QY 258 IIPFDISOGKODNLDVLIHLNVQPREFSMTPTKYNQNSFOKLSINESLPDYIKL 376
DB 258 IIPFDISOGKODNLDVLIHLNVQPREFSMTPTKYNQNSFOKLSINESLPDYIKL 376
QY 376 -----LSQTSYD--DLIRVVEVFKPKGVYTLFVN--QSSKCRVLSPOKIDGFR 309
DB 376 -----LSQTSYD--DLIRVVEVFKPKGVYTLFVN--QSSKCRVLSPOKIDGFR 309
QY 309 KIYVDDDDYHLFMYKLQKK 395
DB 309 KIYVDDDDYHLFMYKLQKK 395
QY 395 CGSAMNDNINPFTSPAK 328
DB 395 CGSAMNDNINPFTSPAK 328

```

RESULT 3

DCRTDM

adenosylmethionine decarboxylase (EC 4.1.1.50) precursor - golden hamster

C/Species: Mesocricetus auratus (golden hamster)

C/Date: 30-Sep-1992 #sequence revision 30-Sep-1992 #text\_change 09-Jul-2004

C/Accession: S22358; S19871

R/Tekwanti, B.L.; Stanley, B.A.; Pegg, A.E.  
 Biochim. Biophys. Acta 1130, 221-223, 1992

A/Title: Nucleotide sequence of hamster S-adenosylmethionine decarboxylase cDNA.  
 A/Reference number: S22358; MUID:92223099; PMID:1562599

A/Accession: S22358

A/Molecule type: mRNA

A/Residues: 1-334 <TEX>

A/Cross-references: UNIPROT:P28918; EMBL:X63861; NID:G55521; PIDN:CAA45343.1; PID:G5552

A/Experimental source: liver of Syrian golden hamster